

Executive Summary

EFFICIENT INTERCARRIER COMPENSATION MECHANISMS FOR THE EMERGING COMPETITIVE ENVIRONMENT

Background

Interconnection refers to the ability to interchange traffic among multiple telecommunications networks, so that from the end user's point of view, there is only one seamless, national "public" telecommunications network connecting all users. While interconnection has long been in place for the franchised monopoly local telephone companies that serve non-overlapping areas, the extension of interconnection arrangements to new market entrants, the competitive local exchange carriers (CLECs), has been a crucial element in their ability to compete. The FCC's August, 1996 *Local Competition Order* established a system of explicit reciprocal compensation between incumbent LECs (ILECs) and CLECs, with charges determined on the basis of ILEC costs, and applied symmetrically to locally-rated traffic exchanged in either direction.

In April 2001, the FCC took two actions with major implications for the financial relationships between interconnected carriers (referred to as "intercarrier compensation" arrangements). On April 18, the FCC issued an order on remand that established a new regime for the intercarrier compensation applicable to so-called "ISP-bound traffic," i.e., dial-up calls made to an Internet Service Provider (ISP). In the companion *Notice of Proposed Rulemaking* (NPRM) adopted on April 19, 2001, the FCC has expressed a strong interest in mechanisms characterized as "bill-and-keep." Under the bill-and-keep model, interconnecting LECs would compensate each other "in kind" by agreeing to terminate each other's calls without explicit charge or, where traffic is out-of-balance, each carrier would **look** to its own end user customers, rather than to each other, for compensation. The NPRM tentatively concludes that bill-and-keep should be adopted for ISP-bound traffic, seeks comment on whether it should also apply to ordinary locally-rated calls, and expresses an interest in "identifying a unified approach to intercarrier compensation" that **could** apply to all types of carriers connecting to the local telephone network. The NPRM takes notice of two recent working papers prepared by economists of the FCC's Office of Plans and

Efficient Inter-carrier Compensation Mechanisms

Policy (OPP), each of which purports to supply economic justification for their preferred variations of a bill-and-keep system.

Purpose

This report seeks to examine the economic and policy bases for intercarrier compensation arrangements between interconnecting LECs, particularly in the context of the emerging competitive environment established by the *Telecommunications Act of 1996*. We begin by considering the purpose of intercarrier compensation, and define several core principles that should govern the model applicable for the exchange of local telecommunications traffic. We then review how LEC intercarrier compensation issues have been negotiated and resolved in the first five years following adoption of the *Act*, so as to understand the problems faced by the FCC and other regulators today, which in part have led to the FCC's current re-examination of this issue. In that context, we analyze the two OPP working papers in some depth, and also consider additional compensation mechanisms that have been proposed for LEC interconnection, particularly for ISP-bound traffic.

Analytical Framework

After reviewing the role that intercarrier compensation plays in the creation of a competitive multi-carrier environment, we have determined certain core principles that should govern the establishment of intercarrier compensation arrangements for the exchange of local traffic. The compensation arrangement should:

- (1) Stimulate efficient economic decisions by entrants, encouraging them to compete with incumbents in those areas where they are or can be more efficient than the incumbent LEC.
- (2) Be competitively neutral, conferring no special benefit or exacting any specific disadvantage upon any party merely by virtue of its incumbency, network architecture, scale or scope.
- (3) Expressly recognize the potential for market diversity, innovation, and experimentation, and as such should not embrace, reflect, or impose any predisposition as to any one particular market outcome (such as one in which balanced originating/terminating traffic for each CLEC is achieved) or that would penalize any party for deviating from, or failing to achieve, that result.
- (4) Be comprehensive and consistent across all network functions having substantially similar economic and technical characteristics and costs.

Efficient Intercarrier Compensation Mechanisms

- (5) To the extent possible, accommodate and harmonize with preexisting retail market pricing practices and, to the extent that the compensation arrangement cannot be conformed to such practices, it should only be implemented if this can occur concurrently with a comprehensive revision of retail pricing embracing all services and all jurisdictions.
- (6) Be relatively simple and straightforward and should be capable of being implemented, maintained and administered efficiently and with a minimum of transaction-related costs.
- (7) Be transparent to the end user, creating no differentiation in retail end user pricing of services based upon whether the end-to-end call is completed by one or by more than one carrier.
- (8) Be maintained in place on an essentially permanent basis, subject only to minor “technical corrections” whose purpose is primarily ministerial in nature.

Principal Findings

Our principal findings are as follows:

- The perceived “problems” with the existing intercarrier compensation mechanism of explicit reciprocal compensation payments — traffic imbalances and the growth in payments by ILECs to CLECs for termination of ISP-bound calls — are properly viewed as the outcome of exactly the type of competition that the *Telecommunications Act of 1996* and the FCC’s *Local Competition Order* was intended to promote, and do not represent market “failures” that must be remedied by further regulatory intervention.
- Despite the recent revival of interest in a bill-and-keep model for intercarrier compensation — which was flatly opposed by most ILECs when first considered in post-Act arbitrations and regulatory proceedings to establish reciprocal compensation rates — the economics of bill-and-keep have not changed from the period when the FCC previously concluded that it was reasonable to apply *only* when carriers exchanged traffic that was roughly balanced so that *mutual* compensation would take place.
- The OPP papers cited in the NPRM fail to afford a sound economic or policy basis for regulators to impose “bill-and-keep” arrangements as the preferred solution for intercarrier compensation on ISP-bound calls and other locally-rated traffic. The OPP papers:

Efficient Intercarrier Compensation Mechanisms

- (1) Fail to recognize the intrinsic linkage between the method adopted for intercarrier compensation and the retail prices paid by end users, which causes their analyses to be fundamentally incomplete, and fail to appreciate the enormous disruptions and formidable regulatory burdens that would arise in the attempt to transition to their proposed “bill-and-keep” arrangement.
 - (2) Make certain assumptions concerning the allocation of the benefits and costs of a call between the calling and called parties, assumptions that are unsupported by any factual evidence and that are most likely wrong as an empirical matter.
 - (3) Inconsistently combine theoretical and pragmatic considerations to support their concrete proposals for how interconnection should be priced.
 - (4) Unduly defer to existing architectures and practices of ILECs, in effect requiring entrants to accept what amounts to a “take-it-or-leave-it” set of interconnection conditions, such as existing ILEC local calling area definitions and the premise that inward and outward traffic that is out-of-balance is categorically to be discouraged.
- When evaluated using appropriate criteria, including economic efficiency, competitive neutrality, and impacts upon end users, neither bill-and-keep nor other options that have been considered for application to ISP-bound traffic, including traffic imbalance thresholds and access charge treatment, would provide a satisfactory alternative to the existing form of reciprocal compensation arrangements.

Conclusion

The current system of explicit reciprocal compensation for interconnecting LECs has generally worked well and in harmony with the pro-competitive policies underlying the *Telecommunications Act of 1996*. When certain CLECs perceived a competitive advantage over ILECs in providing call termination services to ISPs and other high-volume customers, they were able to define and succeed in that market, and in so doing have exerted competitive pressure on the ILECs’ interconnection rates generally, exactly **as** the FCC’s policy of establishing symmetrically-applied interconnection rates was intended to do. Cost-based reciprocal compensation, of the form in place today, is the only mechanism that is competitively-neutral, allows all LECs flexibility in defining the market segments they wish to pursue, whether or not the resulting traffic patterns are balanced, and can ensure that each LEC will be fully compensated for its work in completing calls. In contrast, the so-called “bill-and-keep” approach will satisfy none of those objectives, and would seriously disadvantage CLECs in favor of ILECs in a manner contrary to the *Act*. The FCC and other

Efficient Intercarrier Compensation Mechanisms

regulators should not adopt mandatory bill-and-keep (but allow it to be negotiated, when **two** interconnecting carriers agree it is mutually advantageous to do so) for **ISP** calls or any other locally-rated traffic, and instead should focus its **efforts** on ensuring that the existing reciprocal compensation system for LECs is applied in good faith by all market participants.

Table of Contents

EFFICIENT INTERCARRIER COMPENSATION MECHANISMS FOR THE EMERGING COMPETITIVE ENVIRONMENT

PREFACE

EXECUTIVE SUMMARY

INTERCARRIER TRAFFIC IN A COMPETITIVE, MULTI-CARRIER ENVIRONMENT	1
Interconnection and the mutual exchange of traffic	1
The “Intercarrier Compensation” Rulemaking	3
Interconnection and intercarrier business relationships	5
The roles of carriers participating in the provision of end-to-end telephone calls in a competitive multi-carrier environment.	10
Establishing an appropriate business model for the interchange of local traffic.	18
INTERCARRIER COMPENSATION: FROM THE <i>ACT</i> TO THE PRESENT	21
The present reciprocal compensation mechanism was dictated by ILECs based upon their assessments as to the ability of entrants to compete	21
Reciprocal compensation payments for terminating traffic are properly viewed as “competitive losses” — rather than as “costs” — to the originating LEC.	22
Payments should compensate each participating carrier for the work each performs in completing calls handed-off to it.	31

Efficient Inter-carrier Compensation Mechanisms

Conclusion	34
THE FALLACY OF BILL-AND-KEEP	35
“Bill-and-Keep” is not <i>reciprocal</i> compensation unless traffic is in balance	35
The new interest in “Bill-and-Keep”	36
The analyses advanced in the two OPP papers are fundamentally incomplete, because they fail to consider the impacts that their proposed inter-carrier bill-and-keep regimes would have upon the charges applied to end users,	39
The OPP papers rely upon a flawed treatment of the allocation of benefits and costs of a telephone call between the subscriber who places the call and the called party.	44
Both papers inconsistently combine theoretical and pragmatic considerations to support their concrete proposals for interconnection pricing.	47
The papers give undue deference to existing architectures and practices of ILECs, in effect requiring entrants to accept what amounts to a “take-it-or-leave-it” set of interconnection conditions, such as existing ILEC local calling area definitions and the premise that inward and outward traffic that is out-of-balance is to be discouraged.	49
OTHER INTERCARRIER COMPENSATION ARRANGEMENTS	54
Traffic Imbalance Thresholds and Related Payments Limitations	54
The “Access Charge” Model	56
Conclusion	61
CONCLUSION	62

1 | INTERCARRIER TRAFFIC IN A COMPETITIVE, MULTI-CARRIER ENVIRONMENT

Interconnection and the mutual exchange of traffic

Interconnection — the ability to interchange traffic among multiple telecommunications networks — may well be the single most important element in a competitive, multi-carrier telecommunications marketplace. The value of a telecommunications network is a function of the number of individual users that are connected to it, either directly or via an inter-network connection. Carriers with large, ubiquitous networks, such as incumbent local exchange carriers (ILECs), would thus possess a formidable market advantage over smaller rivals were the new entrants prevented from interconnecting their networks with those of the ILECs. Indeed, there is probably no realistic scenario under which a carrier could survive whose network does not offer its users the same level of connectivity as is available from ILECs.¹

It is thus not surprising that interconnection was among the earliest competitive policy issues to be addressed by the FCC when, in 1971, it issued the landmark *Specialized Common Carrier* ruling that, among other things, authorized “Other Common Carriers”

1. One of the earliest FCC moves toward telecommunications competition is found in its 1959 *Above 890* decision, 27 FCC 359, 396 (1959), which made spectrum available for general use private microwave networks. Previously, private microwave was largely restricted to “right-of-way” companies such as railroads, pipelines and certain (non-telecommunications) public utilities. However, in authorizing private microwave networks for internal corporate telecommunications uses, the Commission *did not* require that local or long distance public telephone networks allow any interconnection by the private systems. Not surprisingly, private microwave never became a significant competitive alternative to the monopoly public network services, and it was not until MCI sought interconnection rights as part of its initial application, filed in the mid-1960s, to construct a common carrier microwave system in the Chicago-St. Louis corridor that the Commission was confronted with the actual economic significance of interconnection to the development of competing telecom networks. See *Specialized Common Carrier Services, First Report and Order*, 29 FCC 2nd 870, 940 (1971). *Recon. denied*, 31 FCC 2nd 1106 (1971). *Aff’d sub nom. Washington Utilities & Transportation Commission v. FCC*, 513 F. 2d 1142 (9th Cir. 1975).

Intercarrier Traffic in a Multi-Carrier Environment

(“OCCs”) to interconnect with the Bell System’s and Independent telcos’ then-incumbent monopoly local and long distance **networks**.²

It is also not surprising that the incumbent telecommunications monopolies have from the outset opposed — and to this very day continue to resist — interconnection requirements that have been imposed upon them by FCC regulation and by Congressional legislation.’ As a direct result of their 100+ years of protected monopoly status, the incumbent local exchange carriers have been able to construct ubiquitous networks that support universal connectivity with virtually all residential, business, institutional, and government telecommunications users nationwide. Moreover, the incumbent carriers have long recognized the importance of interconnecting *among themselves* to the point where, from the perspective of most users, there is only one seamless national, wall-to-wall “public” telecom network. In fact, but for the requirement that ILECs interconnect with *non-incumbent*, competitive carriers, the incumbent monopolies would possess a literally insurmountable advantage vis-a-vis their new and far smaller rivals, such that meaningful competition from these entrants would be, for all practical purposes, essentially unthinkable. Mandatory interconnection means that at least this aspect of the incumbents’ various competitive advantages are attenuated to the point where even the smallest entrant can offer its subscribers access to anyone, anywhere.

Interconnection among multiple networks has, in fact, long been a standard practice in “network-based” industries such as telecommunications and transportation. Even before competition was introduced into the telephone industry beginning in the 1970s, no single incumbent monopoly owned or controlled a network offering “on-net” ubiquitous nationwide connectivity. In fact, at one point there were more than two thousand incumbent local exchange monopolies with subscriberships varying between less than one hundred to the tens of millions. Significantly, however, these networks were *non-overlapping* with respect to their geographic coverage; at any single location, customers would only be offered service by a single provider. The non-overlapping incumbent monopolies readily interconnected *with one another*, because by so doing each would make its own network far more valuable to its customers — and thus capable of generating substantially more revenue overall — than would be the case if each carrier’s network were operating as an island, isolated from anything beyond its necessarily limited geographic footprint. The problem, of course, was that membership in this exclusive “club” was strictly limited to incumbent monopolies; no competing carriers whose serving areas overlapped with any incumbents were invited to join.

2. *Specialized Common Carrier Services*, First Report and Order.

3. The duty of ILECs to interconnect with competing service providers is expressly stated at Section 251(c)(2) of the *Telecommunications Act* of 1996. ILECs must also comply with the more general interconnection **obligation** set forth in Section 251(a)(1) which applies to all telecommunications carriers.

Intercarrier Traffic in a Multi-Carrier Environment

The *Telecommunications Act of 1996* (as well as pioneering state legislation that in some cases predated the *Act*) created a new era by establishing a legal right for new market participants, the competitive local exchange carriers (CLECs), to secure interconnection with the incumbent LECs (ILECs). However, it was the FCC's August, 1996 *Local Competition Order* that implemented the *Act's* new interconnection requirements.⁴ In brief, the *Local Competition Order* established a system of explicit reciprocal compensation payments between ILECs and CLECs, with rate levels to be determined on the basis of the ILEC's costs (calculated in accordance with the "Total Element Long Run Incremental Cost" (TELRIC) methodology). Importantly, interconnection rates were to be applied symmetrically, so that the same cost-based rate applied to locally-rated traffic exchanged in either direction.⁵ Acting under these guidelines, state regulators have approved numerous interconnection agreements between ILECs and CLECs that have allowed CLECs to enter the market and attempt to compete for local exchange service customers.

The "Intercarrier Compensation" Rulemaking

In April 2001, the FCC took two actions that, taken together, constitute an attempt to effect a radical alteration to the financial relationships between carriers applicable to the exchange of traffic between their interconnected networks (which are generically referred to as "intercarrier compensation" arrangements). First, on April 18, the FCC adopted an Order on Remand and Report and Order that established a new regime for the intercarrier compensation applicable to so-called "ISP-bound traffic," i.e., dial-up calls destined to an Internet Services Provider (ISP).⁶ Two years earlier, the FCC had issued a Declaratory Ruling finding that ISP-bound traffic was jurisdictionally mixed and largely interstate, and on this basis ruled that the reciprocal compensation obligations that had been established in the *Telecommunications Act of 1996* for the exchange of local traffic would not apply for ISP-bound traffic. That Declaratory Ruling was subsequently vacated in part by the U.S. Court of Appeals for the D.C. Circuit and remanded to the FCC, after the Court had determined that the FCC had failed to provide sufficient justification for its conclusion that ISP-bound

4. *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, rel. August 8, 1996, 11 FCC Rcd 15499, 15844-15856 and 16217-16219 (*Local Competition Order*), aff'd in part and vacated in part sub nom., *Competitive Telecommunications Ass'n v. FCC*, 117 F.3d 1068 (8th Cir. 1997) and *Iowa Utils. Bd. v. FCC*, 120 F.3d 753 (8th Cir. 1997), aff'd in part and remanded, *AT&T v. Iowa Utils. Bd.*, 119 S. Ct. 721 (1999).

5. *Id.*, at paras. 1085-1089.

6. *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996 and Intercarrier Compensation for ISP-Bound Traffic*, CC Docket Nos. 96-98 and 99-68, Order on Remand and Report and Order, FCC 01-131 (adopted April 18, 2001) ("*ISP Remand Order*").

Intercarrier Traffic in a Multi-Carrier Environment

traffic should be classified as interstate.’ In the *ISP Intercarrier Compensation Order*, the FCC advances a new, different rationale to support its earlier conclusion that ISP-bound traffic does not qualify for reciprocal compensation.’ In addition, the order establishes a mechanism, including progressively lower per-minute rate caps and limitation on the extent of traffic growth over the next three years, intended to transition ISP-bound traffic from reciprocal compensation payments to a “bill-and-keep” arrangement in which LECs exchange traffic without any explicit compensation for terminating the traffic handed off by another LEC.⁹ Importantly, the Order also ties application of the rate caps for ISP-bound traffic to comparable treatment for non-ISP traffic: The rate caps can be applied only if the ILEC offers to exchange *all* local traffic (within a given state) at the same rate.” The FCC explained that this “mirroring” requirement is necessary because the record before it “fails to establish any inherent differences between the costs on any one network of delivering a voice call to a local end-user and a data call to an ISP,” so that the same intercarrier compensation framework and rates should apply to both types of traffic.”

In the companion *Notice of Proposed Rulemaking* (NPRM) adopted on April 19, 2001, the FCC has proposed a “unified intercarrier compensation regime” founded upon the bill-and-keep approach, that would encompass not only ISP-bound traffic and ordinary voice local calls, but also interstate access traffic as well.¹² As expressed in the NPRM, the FCC sees the objectives of this initiative as including the following:

- Increasing the efficiency of intercarrier compensation arrangements;¹³

7. *Bell Atl. Tel. Cos. V. FCC*, 206 F.3d 1 (D.C. Cir. 2000) (*Bell Atlantic*).

8. Specifically, the FCC now finds that ISP-bound traffic falls into the category of “information access,” which it contends is exempted from the reciprocal compensation obligations set forth in Section 251(b)(5) of the 1996 Act because of the “carve-out” provision for information access appearing at Section 251(g). *ISP Remand Order*, at paras. 34-35.

9. *Id.*, at paras. 77-88.

10. *Id.*, at para. 89.

11. *Id.*, at para. 90.

12. *Developing a Unified Intercarrier Compensation Regime*, CC Docket No. 01-92, Notice of Proposed Rulemaking, FCC 01-132 (adopted April 19, 2001) (“*Intercarrier Compensation NPRM*”), at paras. 2-4. As discussed later in this report (Chapter 3), the NPRM’s specific proposals appear to fall well short of this ambitious vision and may instead lead to imposition of bill-and-keep only upon ISP-bound traffic.

13. *Id.*, at para. 33.

Intercarrier Traffic in a Multi-Carrier Environment

- Eliminating or at least reducing “the opportunities for regulatory arbitrage created by the existing patchwork of intercarrier compensation rules;”¹⁴
- Moving away from regulatory intervention in intercarrier compensation, towards more “market-oriented” mechanisms that could be “largely self-administering.”¹⁵

In its consideration of these issues in the *Intercarrier Compensation NPRM*, the Commission relies upon two papers prepared by FCC economists and issued by the FCC’s Office of Plans and Policy (OPP) that purport to analyze intercarrier compensation alternatives from the ground up, i.e., beginning from basic economic principles and defined policy objectives.¹⁶ In order to respond to the FCC’s intercarrier compensation initiative and the particular proposals advanced in the two OPP papers, this report must similarly begin with a review of the economic and policy fundamentals underlying the interconnection arrangements between telecommunications carriers, as we do below.

Interconnection and intercarrier business relationships

When the provision of a requested connection involves more than one carrier’s network, some process needs to be established **for** an apportionment of the total charge paid by the customer for the service among the participating providers. There are a number of possible business models that can apply in this situation:

- (1) The customer can purchase the component services directly from each of the providers, at prices established by or negotiated with each, and arrange for the component services to be interconnected so as to provide for end-to-end connectivity.

14. *Id.*, at para. 11, footnote omitted. By “regulatory arbitrage,” the FCC refers in part to allegations that the CLECs focusing on the ISP market are amassing windfall profits under the existing symmetrically-applied termination rates for reciprocal compensation.

15. *Id.*, at para. 34.

16. DeGraba, Patrick, *Bill-and-Keep at the Central Office as the Efficient Interconnection Regime*, OPP Working Paper No. 33 (December 2000); Atkinson, Jay M. and Christopher C. Barnekov, *A Competitively Neutral Approach to Network Interconnection*, OPP Working Paper No. 34 (December 2000). While we recognize that each paper includes a disclaimer on its frontpiece stating that “given the preliminary character of some titles, it is advisable to check with the authors before quoting or referencing these working papers in other publications,” we also note that the *Intercarrier Compensation NPRM* cites to both papers extensively.

Intercarrier Traffic in a Multi-Carrier Environment

- (2) The customer deals directly with only one provider, who then arranges for the required services from the other participating providers and engages in financial settlements with those other participating providers.
- (3) Some combination of (1) and (2).

Consider the following example from the transportation industry. A passenger takes a trip from her home in Washington to visit her friend in Albuquerque. Although this trip could be completed on the same airline, the passenger might want to change airlines at some interconnecting point in order to obtain preferred flight times or simply because she needs to stop off at that location. In this example, the passenger could purchase a Washington-Chicago ticket from American Airlines and then a separate Chicago-Albuquerque ticket from United Airlines. Alternatively, she can purchase the entire ticket from American (the originating carrier). Generally, where two or more airlines are involved in a particular routing, the customer typically deals only with only one carrier in effecting the service transaction (i.e., arranging and paying for the freight shipment or making flight reservations and paying for the ticket for the entire trip). In the airline industry, the *originating* carrier (i.e., the carrier that provides the initial flight segment) will book the flights and issue the ticket for the entire trip, even if more than one carrier is involved. In fact, our passenger still needs to get from her home to the airport in Washington and from the Albuquerque airport to her friend's house, and may engage common carriers (for example, taxis or busses) for one or both of these segments as well. However, in most (but not all) cases, the passenger will deal with the ground transportation providers directly (although some airlines will also arrange for ground transportation as part of a first or business class ticket). So both intercarrier models may be employed in configuring a complete end-to-end trip.

Where one provider acts on behalf of others in ordering and configuring the interconnected components of the end-to-end service, it will need to enter into some type of business relationship with the connecting carriers to compensate them for the services they are called upon to provide. Any of several types of business models might be used for this purpose. In this discussion, we will refer to the carrier that accepts the request for service and receives payment from the end user customer as the "transacting carrier," and will refer to all other carriers that are involved in fulfilling the requested service as the "participating carriers."¹⁷ Significantly, there is no requirement that the *transacting carrier* also be the *originating carrier* — the carrier on which the telephone call or travel is initiated.

17. Our choice of the terms "transacting carrier" and "participating carrier" rather than, for example, "originating carrier" and "connecting carrier" reflects the fact that the first carrier that the end-user encounters need not be the one with whom he or she transacts the order or request for service.

Intercarrier Traffic in a Multi-Carrier Environment

- (1) The transacting carrier purchases specific services from the other participating carrier(s), perhaps at wholesale prices, and either resells them directly or incorporates them into the (value-added) service it provides to the end user customer.

Interexchange carriers purchase and pay for switched access services from LECs, interconnect and combine them with their own interexchange transport service, and provide the end-to-end connectivity in the form of retail “long distance calls” to their end user customers.

- (2) The transacting carrier enters into a peer-to-peer interconnection arrangement, whereby it “hands off” the customer’s traffic to the participating carrier at an agreed-upon point of interconnection, with the carriers sharing in some agreed-upon manner the payments received by the transacting carrier for the service.

In our airline example above, American Airlines receives payment from and issues the ticket to the end user customer, and remits an agreed-upon portion of that payment to United Airlines for the flight segment that United will provide.

The transacting local exchange carrier receives payment for and provides an end-to-end local call to its customer where the called party is served by a different local carrier. The transacting carrier hands-off the call to the other LEC with which it is interconnected, and remits an agreed-upon portion of the payment for the connecting carrier’s work in completing the call to its end user local service customer.

Where the transacting carrier purchases services from, and hence is a customer of, the participating carrier (as in the IXC/LEC relationship described in Case (1) above), such payments could reasonably be viewed as constituting “costs” to the transacting carrier; indeed, in some cases the transacting carrier might confront the alternative of purchasing the interconnected service from one of several other carriers, or of producing the service itself.¹⁸ Where the relationship is peer-to-peer and the remittance is in the form of a revenue-sharing arrangement, the payment should not be considered a “cost” to the

18. IXCs have in fact pursued both of these alternatives. They regularly purchase special access type services from “competitive access providers” (“CAPs”) to serve high-volume end-user customers, and have themselves pursued entry into the wireless, cable and CLEC markets as alternative (non-ILEC) means of delivering their long distance services to end-user customers.

Intercarrier Traffic in a Multi-Carrier Environment

transacting carrier; rather, it is simply a *remittance* paid by it to one or more other carriers for their share of the total service that is being furnished to the customer.”

There are several types of peer-to-peer compensation arrangements that are commonly used for hand-offs between network-based providers, whether in telecommunications, transportation, or other fields:

- (1) ***Reciprocal compensation*** — the transacting carrier makes a cash payment to the participating carrier for those components of the total end-to-end service that the latter provides. In many cases, either party may sometimes act as the transacting carrier while at other times be the participating carrier. Where carrier **A** is the transacting carrier and carrier B is the participating carrier, A makes a cash payment to B. Conversely, where carrier B is the transacting carrier and carrier **A** is the participating carrier, then B makes a cash payment to **A**.
- (2) ***Reciprocal compensation with a net settlement*** — essentially the same as method (1), except that the two cash flows (A-to-B and B-to-A) are netted off against each other, with a net cash payment running from the carrier with the larger reciprocal compensation obligation. If the payments arising from the two traffic flows are exactly equal,²⁰ no payment in either direction would take place.
- (3) ***In-kind exchange of services*** — where the respective values of the services that each of the two connecting carriers furnishes to the other are approximately the same or, more specifically, where the *difference* between those two values (i.e., the amount that would be paid under the “reciprocal compensation with a net settlement” method) is less than the costs that the two carriers would incur in making detailed measurements of the volume of service each provides to the other (“transaction costs”) *and* where neither party would have an incentive or ability to “game” the arrangement by taking advantage of the fact that it was not confronting any usage-sensitive charge for its use of the connecting carrier’s services, the carriers may agree on an “in-kind” exchange of services where no actual cash

19. The initial carrier might incur transaction costs relating to its role in facilitating the end-to-end service, e.g. in performing billing and collection functions for the connecting carriers. However, any such costs are conceptually distinct from (and typically minimal in comparison to) the revenues that ultimately must flow to the connecting carriers as compensation for their services.

20. Note that what is relevant here is the amounts of the *payments* rather than the volume of traffic. Where each carrier’s charge per unit of traffic to the other **is** the same, the payment and traffic relationships will necessarily be proportionate **to** one another. **In** theory, there is no requirement that the charges be the same. However, as we shall explain, setting the respective charge levels for peer-to-peer interconnection is a reasonable default condition that should only be modified under certain special circumstances.

Intercarrier Traffic in a Multi-Carrier Environment

changes hands. Under such an arrangement, carrier B would agree to complete calls handed off to it by carrier A without any explicit charge or payment, in exchange for which carrier A would agree to complete calls handed off to it by carrier B without any explicit charge or payment.

Interconnections between carriers with non-overlapping geographic footprints (i.e., between two carriers that do not compete directly with one another) typically produce “balanced” traffic flows, i.e., the volume of traffic originated on A and handed off to B is approximately equal to the volume of traffic originated on B and handed off to A. In-kind compensation arrangements are particularly well-suited to situations in which traffic is roughly in balance, because the transaction costs associated with detail usage accounting and billing would typically exceed the “inequity” of any small systematic imbalance. Traditionally, interconnection arrangements between and among incumbent LECs with non-overlapping service territories (e.g., Bell-Independent) have been structured along these lines.

However, where the interconnecting carriers have overlapping geographic footprints (as in ILEC-CLEC interconnections), traffic flows are unlikely to be in balance. The reason: As new entrants into a market long served exclusively by an ILEC, CLECs will necessarily be forced to target certain types of customers whose collective traffic characteristics are unlikely to be simply a scaled-down version of the traffic characteristics of the entire ILEC customer population. Indeed, CLECs are not required to become mere miniature versions of ILECs; they are expected to innovate, specialize, and to target their service offerings to satisfy customer needs that may not be adequately met by the existing providers.

There is in fact no requirement that a CLEC’s traffic adhere to any predetermined set of attributes. In a closed, pure monopoly world, there will necessarily be roughly as many calls originated by ILEC customers as there are calls delivered to ILEC customers,²¹ although *individual customers* may present imbalances between incoming and outgoing traffic. That aggregate condition will not apply to individual carriers in a competitive, multi-carrier environment. Depending upon which customers a given CLEC serves and the traffic characteristics of each, that CLEC may either handle more call originations than terminations, or vice versa; in fact, a traffic pattern that is perfectly “in balance” would be highly coincidental. And to the extent that some, perhaps large, fraction of all of the traffic of a given CLEC is either handed-off to or received from another LEC, there will almost certainly be an imbalance of traffic flows as between the CLEC and the other LEC that generally reflect the traffic attributes of the CLEC’s customer base.

21. To the extent that some call *attempts* are not completed (because the attempt results in a busy or no-answer condition), the aggregate number of call originations will generally exceed the aggregate number of call terminations.

Intercarrier Traffic in a Multi-Carrier Environment

There is no legitimate public policy basis that would expect or require that each and every CLEC to achieve a balance of outgoing and incoming traffic, or to expect or require that each CLEC structure its mix of services and seek out a mix of customers so as to achieve that outcome. CLECs should no more be forced to emulate ILEC customer and traffic characteristics than they should be made to replicate ILEC networks or offer the services across a geographic footprint that precisely or even closely coincides with that of the dominant incumbent. Indeed, *policies that would work to promote such an outcome, or that would penalize CLECs for failing to become nothing more than smaller versions of the ILECs with which they seek to compete, are inherently anticompetitive and will work to discourage or block entry altogether.*

To be sure, while the characteristics of interconnection traffic to/from a given CLEC will reflect the nature of its customers' use of its services, the types of customers that the CLEC may target may itself be influenced by the terms of the business relationship(s) applicable to interconnected traffic flows. *It is precisely for this reason that the terms of such business relationships must closely reflect ILECs' actual costs.* Entrants must be confronted with a set of economic signals that will encourage them to make efficient business choices. As we shall discuss presently, the heart of the debate over "reciprocal compensation" lies in the *price* at which ILEC/CLEC traffic is interchanged. Setting a price that is significantly in excess of cost is no less inefficient than setting a price that is significantly below cost; both will create economic distortions and incentives for carriers to "game" the system, and both will produce inefficient economic choices, albeit in the opposite direction.

The roles of carriers participating in the provision of end-to-end telephone calls in a competitive multi-carrier environment.

The traditional practice in the telecommunications industry is that the customer who originates a call requiring participation by more than a single carrier enters into a business transaction with one carrier (although not necessarily the one over which the call is actually originated), which in turn arranges for the interconnecting services that other carriers must provide in order for the requested call to be completed.²² In general, there are two intercarrier business models that currently apply for most wireline public switched telephone number (PSTN) traffic in the US — the "local call" model, which employs the peer-to-peer relationship (Figure 1), and the "interexchange call" model, which uses the "purchased services" approach (Figures 2 and 3). In both cases, calls are provided to the end-user

22. "Reverse-charge" or 800-type services are a special case, since the call *recipient* is the entity that has agreed to pay for the call. As we shall show, this is simply a special case of the more general "sent-paid" model that applies to virtually all telephone calls placed over the public switched network.

RECIPROCAL COMPENSATION

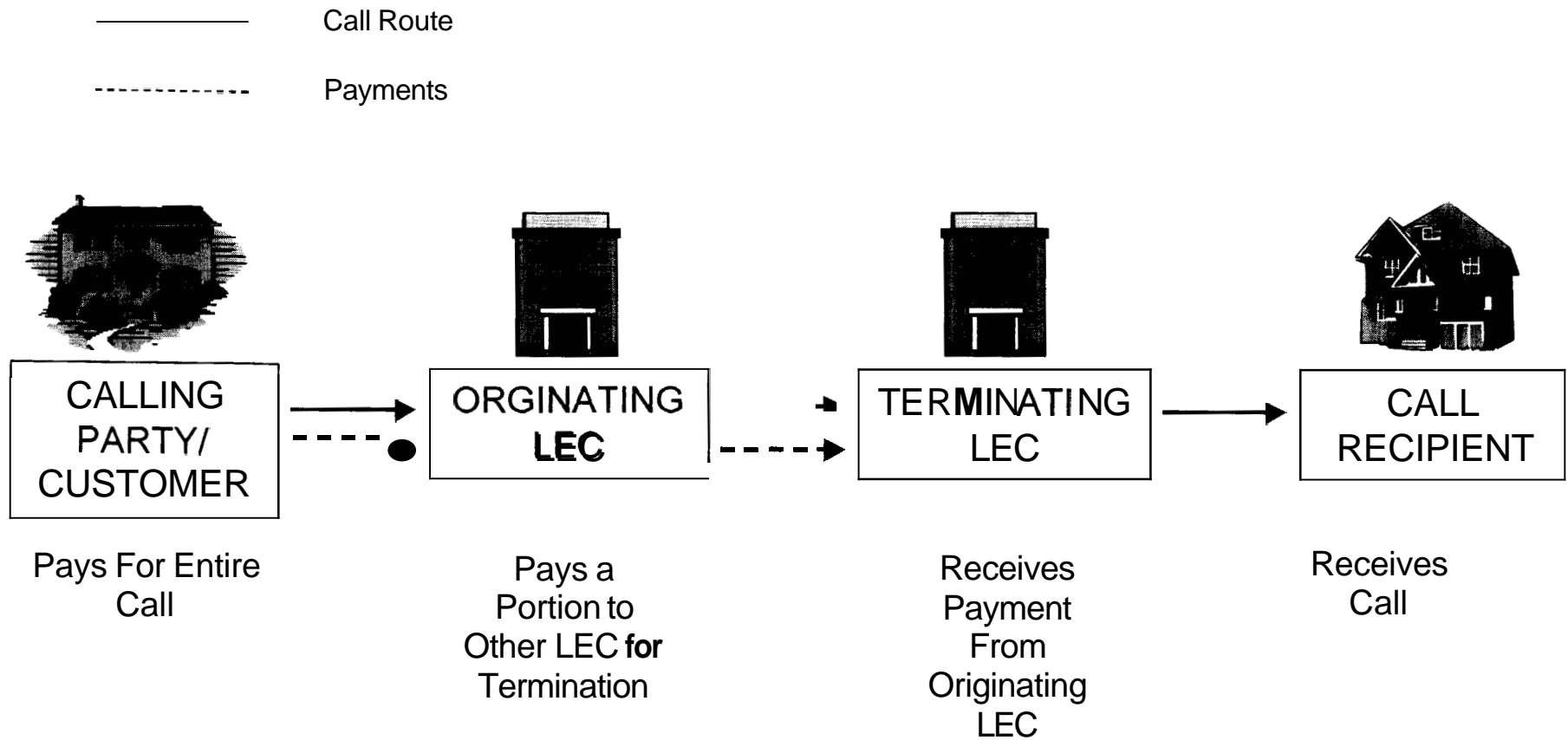


Figure 1. Call Routing and Flow of Payments Under Reciprocal Compensation

ACCESSCHARGES

Toll Call

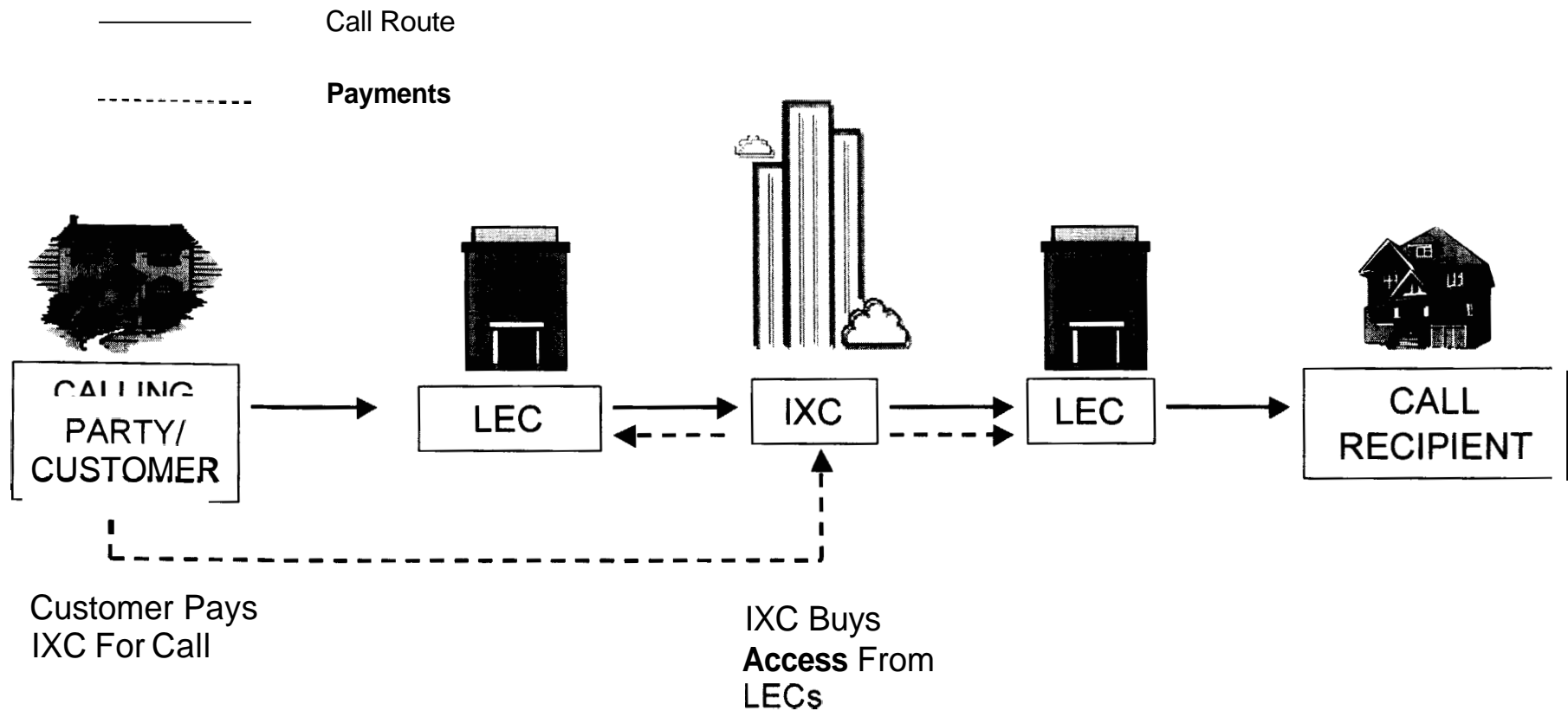


Figure 2. Call Routing and Flow of Payments for a Toll Call

ACCESSCHARGES

800 Service

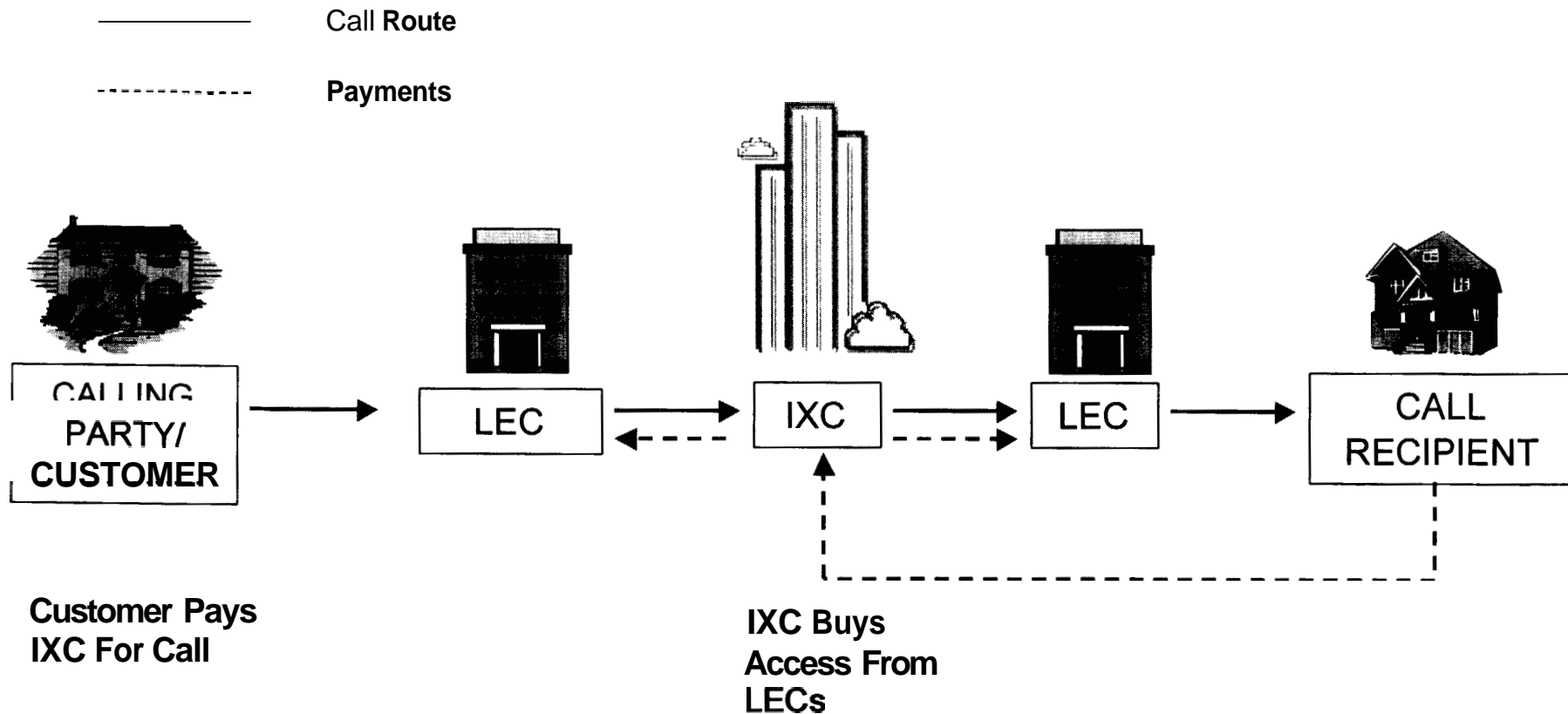


Figure 3. Call Routing and Flow of Payment for an 800-Service Call

Intercarrier Traffic in a Multi-Carrier Environment

customer on a “sent-paid” basis, with the party who originates the call (or, in the case of 800-type services, the party receiving the call) paying the *entire charge* for the end-to-end connection.

The “sent-paid” approach to charging for calls. The almost universal practice throughout the US is for calls to be provided on a “sent paid” basis by the carrier with whom the party who pays for the call has contracted for the service. In the case of local calls, that is the local exchange carrier on whose network the call originates; in the case of “long distance” calls, it is the interexchange carrier to which the call is handed-off by the originating (local) carrier whose network is used to access the IXC.²³

In the case of local calls, the customer who originates the call pays his or her local carrier to get the local call from the point of origin all the way to its intended destination, which means that the originating carrier is compensated by its customer for local switching at both the originating and terminating ends of the call as well as for transporting the call the entire distance between the originating switch and the terminating switch. Most importantly in the context of calls involving more than one local carrier, the “sent paid” approach means that the calling party pays in full for the *termination* of the call, as well as for its origination, *even if a carrier other than the originating (and billing) carrier ultimately terminates the call* to the called party, and that the calling party’s *network* (i.e., the carrier with whom the calling party maintains a customer-supplier relationship) pays the terminating carrier for its work in completing the call.

Local call “sent paid” pricing and payment arrangements can take many forms, including flat-rated local calling over a wide area; “extended area service” or “extended area calling” plans that have the same effect; flat-rated local calling over a smaller area with some type of message unit or local measured charge for local calls outside that area; flat-rated local calling for a certain number of calls per month, with a per-message or other charge for usage above that level; and even local service with no usage included in the base price at all, with each call subject to a separate local message or measured service charge.

The “sent paid” approach to local call charging has been in place since the introduction of local telephone service more than a century ago, and has long provided the framework both for the interchange of traffic as well as for the allocation of usage revenues as between two incumbent local exchange carriers (e.g., a Bell Company and an Independent Telephone Company). With the introduction of competitive local carriers into the local service market, this same longstanding sent-paid framework has been extended to the new entrants as well.

23. One notable exception is **found** in the treatment that applies **for** calls placed **to** wireless telephones, where the calling **party** pays the normal landline charge (local or long distance) to reach the rate center **to** which the called (wireless) number has been assigned, and the wireless call recipient pays the wireless carrier for the “air time” associated with the incoming call.

Intercarrier Traffic in a Multi-Carrier Environment

Under the present “Calling Party’s Network Pays” (“CPNP”) paradigm, when two interconnecting carriers (A and B) jointly complete a local call, the originating carrier that receives payment from its end-user customer who placed the call is responsible for paying the carrier that terminates the call (Figure 1). Carrier A is paid by its customer to complete a “full call,” but itself performs only a “half-call” (from origination to hand-off point), and thus must pay Carrier B to perform the second “half-call” (from hand-off point to termination). Such “payments” may be in cash, made on a net settlement basis, or through an “in-kind” exchange of services under which no cash changes hands, or some combination of these devices.

Like local calls, long distance calls are also placed on a sent-paid basis. However, in the case of “long distance” calls involving an interexchange carrier, the CPNP paradigm is accomplished via a different intercarrier compensation model (the “access charge model”). Generally, such calls are originated by the end-user customer over the same local carrier that provides local exchange service to that customer. Administratively, the call is carried by the originating local carrier to the interexchange carrier designated by the customer using the local carrier’s “switched access” service. The call is then handed-off to the IXC for interexchange transport, and then handed-off by the IXC to another local carrier (the one that provides local exchange service to the called party) using that carrier’s “switched access” service for delivery to the call recipient.²⁴

Under the access charge model, the end-user who originates a call is the customer of the IXC, *despite the fact that the call itself is generally originated over the LEC from which the end-user purchases local telephone service.* The IXC is, in turn the *customer* of the LEC. That is, when the end-user places a call via an IXC, the call is routed by the LEC from the end-user’s phone to the IXC as a “switched access” service, and the charge for that switched access service is billed by the LEC to the IXC (Figure 2). Indeed, the IXC will be charged for the switched access connection even if the ultimate call is not completed, i.e., where it reaches a busy or no-answer condition. The IXC also pays switched access charges to the LEC at the terminating end of the call, for transporting and delivering the call from the IXC’s “point of presence” (“POP”) to the ultimate recipient of the call. Neither the call originator nor the call recipient are billed by their respective LECs for the switched access service. The IXC is billed by the two LECs for these access services, and recovers those payments, along with its other costs (e.g., the cost of transporting the call between LATAs, retailing costs associated with marketing, billing and collection, etc.) in retail long distance rates that it charges to its end-user customers. A similar business relationship applies in the case of 800-type services, except that the called

24. In some cases — particularly where **high** volumes of traffic **from** or to a specific customer location are involved — the connection between the end user and the **IXC** is accomplished via a dedicated facility (as opposed to a switched connection) known as a “special access” service. **Most** such “special access” facilities are also furnished by local exchange carriers, either incumbent or competitive.

Intercarrier Traffic in a Multi-Carrier Environment

party — the 800-service customer — rather than the calling party, pays the IXC for the call (Figure 3).

The choice of business model (“local” vs. “access”) is — or should be — based primarily upon transactional convenience; there is no *theoretical* reason why one approach is necessarily superior to the other in all situations. The interchange of local traffic typically involves only two carriers, whereas the interchange of long distance traffic almost always involves at least **three**.²⁵ Because the interchange of local traffic ordinarily involves a direct bilateral intercarrier linkage at a mutual point of interconnection, a direct peer-to-peer *business* relationship is often the simplest to implement and administer. In the case of long distance services, intercarrier connectivity is far more complex, and the two local access carriers typically do not directly interconnect with one another at all. The **IXC**, on the other hand, is directly connected to LECs at both ends of each call, *so* a business model in which the IXC provides the common business link with the customer and with each of the two access carriers may well be the most operationally efficient **solution**.²⁶

In addition to these *operational* considerations, it is also important to recall that the access charge regime was put in place back in **1984** as a means for maintaining the preexisting and longstanding flow of subsidy support from “long distance” calls to “basic local exchange service.” By paying LECs access charges that had been deliberately set well in excess of the actual traffic-sensitive cost of the access service, IXCs would be forced to maintain the predivestiture, pre-competition subsidy structure. To the extent that access charge-driven subsidies are in the process of being phased out,²⁷ the use of the access charge model for this purpose has become far less important.

25. The same corporate entity may in fact provide the switched access service at both ends of a long distance call (e.g., Verizon Pennsylvania is the access provider at both ends of a call from Philadelphia to Pittsburgh), and following Section 271 approval may furnish the interexchange segment as well. However, since these activities are (in theory) functionally separate and are frequently provided by *different* corporate entities, it is useful to treat the access providers at both ends of a long distance call as if they were separate local carriers and separate from the interexchange carrier as well.

26. A third, and enormously more complex, type of business relationship was posited by a number of CMRS providers responding to the FCC’s *Wireless Calling Party Pays* rulemaking (WT Docket No. 97-207). Under the transaction model envisioned by these carriers, the calling party would, in addition to his traditional business relationship with the local and, where applicable, long distance carriers that handle the call to a CMRS telephone, also have a business relationship with the CMRS carrier served by the *call recipient*. The CMRS carrier on whose network the call was terminated would then bill the *calling party* for the airtime, either directly, via a credit card whose number was provided by the calling party at the time that the call was placed, or via billing and collection services furnished by the originating LEC.

27. See *Access Charge Reform et al*, CC Docket No. 96-262, 94-1, et al, Sixth Report and Order in CC Docket Nos. 96-262 and 94-1, Report and Order in CC Docket 99-249, and Eleventh Report and Order in CC Docket No. 96-45 (CALLS Order), adopted May 31, 2000.

Intercarrier Traffic in a Multi-Carrier Environment

Intercarrier compensation for local calls. The term that is generally used to describe the payment relationships applicable for intercarrier local calls is **reciprocal compensation**. Such compensation arrangements for calls involving an two different LECs are expressly **required** by Sections 251(b)(5) and 252(b)(2)(A) of the 1996 Act.²⁸ Reciprocal compensation consists of the payments made by the first (originating) carrier to the second (terminating) carrier for its work in completing the call. It is referred to as “reciprocal” in that the flow of payments is intended to mirror the flow of traffic; i.e., Carrier A pays Carrier B for terminating calls originated on A and handed off to B for termination, and Carrier B pays Carrier A for terminating calls originated on B and handed off to A for termination. If the amount of these payments per unit of traffic is the same in both directions, and if the traffic flow is precisely in balance (i.e., A gives B the same amount of traffic as B gives A), then no net payment, in either direction, would take place. Specific Compensation mechanisms, including explicit cash and in-kind payment arrangements, are discussed further below.

The entry of **competing** local carriers into the telecommunications landscape has fundamentally altered the nature of intercarrier compensation. In the pure monopoly world, in which ILECs’ service territories were never overlapping and where ILECs and IXC’s generally did not compete with one another (any more than taxis that carry people from their homes to the airport compete with airlines that carry passengers between airports), intercarrier compensation payments (in whatever form and under whatever business model) were essentially a form of revenue-sharing among “partners” in a national telecommunications network. But CLECs and ILECs do compete for the same customers, and payments by one to the other for its participation in a given service transaction, while constituting revenue-sharing as well, also represent “competitive losses” in the sense that had the carrier served both the call originator and call recipient, it would not have had to “share” its revenues with anybody.

Reciprocal compensation payments made by originating LECs to terminating LECs are thus not “costs” to the originating carrier in the traditional sense. Rather, they represent **competitive losses** in that the originating ILEC might have in the past carried the entire call if the CLEC were not present in the market. However, the payment (in whatever form) made by the ILEC to the CLEC for traffic handed-off to the CLEC is simply a remittance

28. Specifically, 47 U.S.C. §252(b)(2)(A) provides that “[f]or the purposes of compliance by an incumbent local exchange carrier with section 251(b)(5), a State commission shall not consider the terms and conditions for reciprocal compensation to be just and reasonable unless (i) such terms and conditions provide for the mutual and reciprocal recovery by each carrier of costs associated with the transport and termination on each carrier’s network facilities of calls that originate on the network facilities of the other carrier; and (ii) such terms and conditions determine such costs on the basis of a reasonable approximation of the additional costs of terminating such calls.”

of monies collected from the ILEC's customer for a total end-to-end service a portion of which is furnished by a connecting carrier rather than by the ILEC itself.

Establishing an appropriate business model for the interchange of local traffic.

From the foregoing discussion, it is now possible to set down certain core principles that should govern the establishment of a competitively appropriate and economically efficient business model for compensating interconnected carriers for their respective participation in the interchange of local traffic.

- (1) The compensation arrangement should stimulate efficient economic decisions by entrants, encouraging them to compete with incumbents in those areas where they are or can be more efficient than the incumbent LEC.
- (2) The compensation arrangement should be competitively neutral, conferring no special benefit or exacting any specific disadvantage upon any party merely by virtue of its incumbency, network architecture, scale or scope.
- (3) The compensation arrangement should expressly recognize the potential for market diversity, innovation, and experimentation, and as such should not embrace, reflect, or impose any predisposition as to any one particular market outcome (such as one in which balanced originating/terminating traffic for each CLEC is achieved) or that would penalize any party for deviating from, or failing to achieve, that result.
- (4) The Compensation arrangement should be comprehensive and consistent across all network functions having substantially similar economic and technical characteristics and costs.
- (5) The compensation arrangement should, to the extent possible, accommodate and harmonize with preexisting retail market pricing practices and, to the extent that the compensation arrangement cannot be conformed to such practices, it should only be implemented if this can occur concurrently with a comprehensive revision of retail pricing embracing all services and all jurisdictions.
- (6) The compensation arrangement should be relatively simple and straightforward and should be capable of being implemented, maintained and administered efficiently and with a minimum of transaction-related costs.

Intercarrier Traffic in a Multi-Carrier Environment

- (7) The compensation arrangement should be transparent to the end user, creating no differentiation in retail end user pricing of services based upon whether the end-to-end call is completed by one or by more than one carrier.
- (8) Once adopted, the compensation arrangement should be maintained in place on an essentially permanent basis, subject only to minor “technical corrections” whose purpose is primarily ministerial in nature.

The first two of these principles requires that the compensation arrangement be **cost-Based** and, in particular, that it be based upon the **ILEC's costs**. If the charge that the transacting carrier is required to pay to the providing carrier is set in excess of the ILEC's cost, a less efficient CLEC would nevertheless be incited to enter the market and offer service. On the other hand, if the payment is below both the ILEC's and that CLEC's cost, a **more efficient** CLEC would be discouraged from entry. By setting the compensation rate at the **ILEC's cost**, CLECs are rewarded for their incremental efficiency and are thus encouraged both to enter the market and to pursue efficiency-enhancing **measures**.²⁹ The requirement for “competitive neutrality” in the second principle would prohibit an intercarrier compensation mechanism from conferring any special advantage or imposing any disadvantage upon, any particular category of carriers.

The third principle would prohibit the basis for or amount of intercarrier compensation to be driven or prejudiced by any particular market outcome such as, for example, one that would envision or assume that traffic flows would be “in balance” as between the two interconnecting carriers. Such a predisposition penalizes an entrant for pursuing a business plan calling for market specialization, and presupposes a market outcome in which entrants are little more than smaller versions of the incumbents.

Closely related is principle (4), which would prohibit the intercarrier compensation payment to be driven or prejudiced by the nature of the service being provided by the CLEC, the use of that service, or the type of customer that the CLEC may be serving. Existing intercarrier compensation arrangements violate this principle in many important

²⁹ ILECs have argued strongly in favor of, and the FCC has adopted, this same principle with respect to the ILECs' retention of efficiency gains under price cap regulation. See **Price Cap Performance Review for Local Exchange Carriers**, CC Docket No. **94-1**, First Report and Order, FCC **95-132** (adopted March **30, 1995**) (“**LEC Price Cap Performance Review**”), at paras. **172, 187-188**; and Fourth Report And Order In CC Docket No. **94-1** And Second Report And Order In CC Docket No. **96-262**, FCC **97-159** (adopted May **7, 1997**) (“**Fourth Report And Order**”), at paras. **147-149**. Specifically, ILECs have held that if they are required to “share” any of their efficiency gains with ratepayers, their incentives to pursue efficiency-enhancing and productivity-improving initiatives would be severely diminished. Extending this same reasoning to ILEC/CLEC intercarrier compensation, if ILECs are permitted to “benefit” from CLEC efficiency gains by paying reciprocal compensation rates that track the **CLEC's costs**, then CLECs' incentives to pursue efficiency-enhancing and productivity-improving initiatives would similarly be severely diminished.